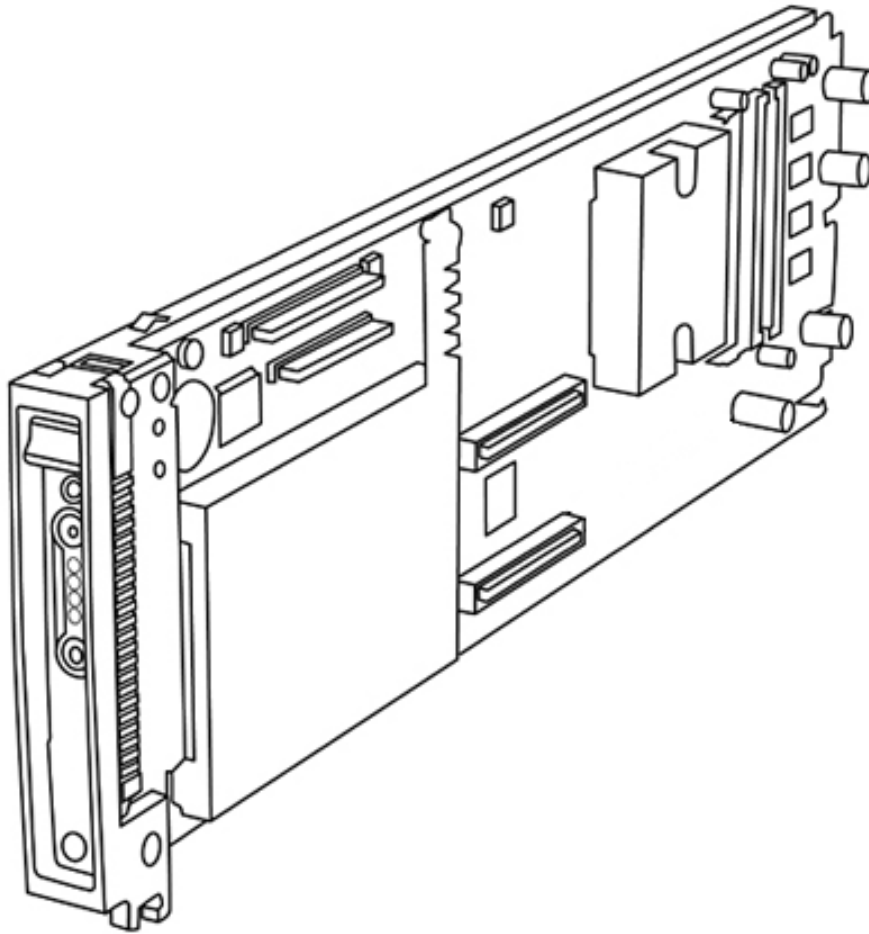


Overview



HP BladeSystem bc1500 Blade PC

At a Glance

- AMD Athlon™ 64 1500+ processor
- 40-GB Ultra ATA/100 5400 rpm hard drive
- 512-MB DDR SDRAM PC2700 (333-MHz) expandable to 2 GB (2 SODIMM slots)
- Two Broadcom 5705F 10/100 Integrated Network Controllers. NIC A is compliant with PXE (Pre-boot execution Environment)
- Connector for graphics diagnostics card
- USB 2.0
- Restriction of Hazardous Substances¹ (RoHS) compliant
- Blade PCs are protected by HP Services, including a limited three-year parts warranty with Advanced Unit Exchange for express permanent replacement of a blade PC. Optional service uplifts available.

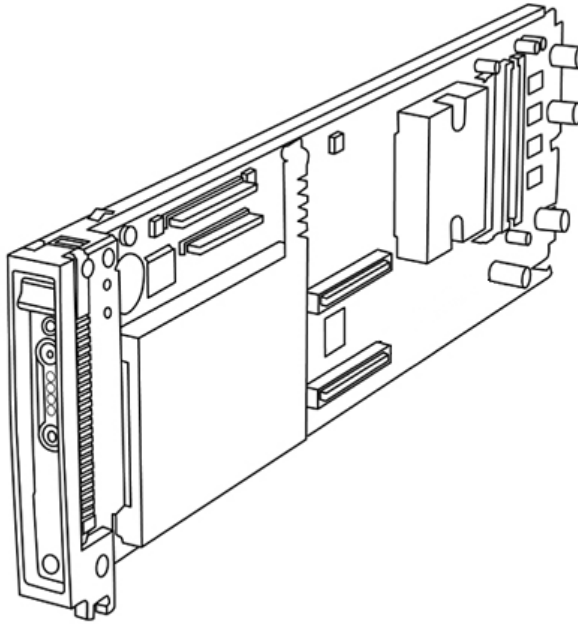
¹ Products are designed to reduce the material used and to reduce or eliminate the use of hazardous materials to lower the environmental impact of HP products.

Overview

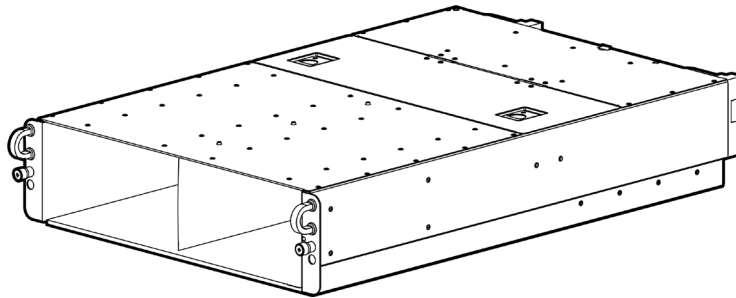
Configuration Steps

For a complete configuration of the HP BladeSystem bc1500 Blade PC system, you need:

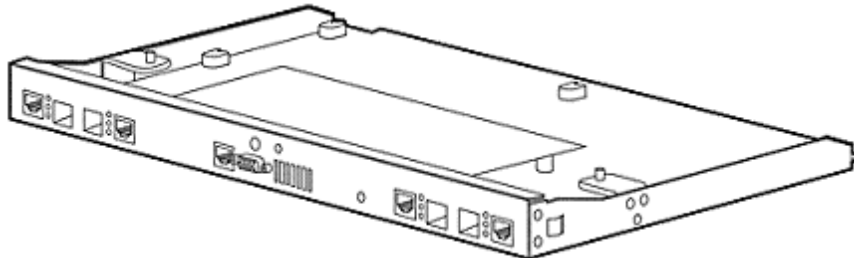
1. HP BladeSystem bc1500 Blade PC (sold in a single-pack or 10-pack)



2. HP e-Class Blade PC Enclosure (each can hold up to 20 blade PCs). The enclosure comes bundled with 20 licenses for the ProLiant Essentials Rapid Deployment Pack.



3. HP BladeSystem PC Blade Switch (for up to 40-to-1 network cable reduction)



Standard Features

HP BladeSystem bc1500 Blade PC

Processor	One AMD Athlon 64 1500+ processor	
Cache Memory	512K L2	
Chipset	ULi M1563M South Bridge NOTE: For more information regarding Acer Labs Inc, please see the following URL: http://www.uli.com.tw .	
Memory	Standard	512-MB DDR SDRAM PC2700 (333-MHz) (1x512-MB SODIMM)
	Maximum	2 GB (2 SODIMM slots total)
Network Controller	Two 5705F 10/100 Integrated Network Controllers; NIC A is compliant with PXE	
Internal Storage	One 40-GB Ultra ATA/100 5400 rpm hard drive	
Industry Standard Compliance	ACPI 1.0b; ANSI C63.4 - 1992; C.I.S.P.R. Pub 22; CFR 47, Part 15; EN 55022; EN 55024; EN 60950: 2000; ICES-003; IEC 61000-4, Section 2-6, 8, 11; IEC 801, Part 2; IPC-A-610; PC2700; PCI 2.3; PXE 2.1; SPD 1.2B; UL 94; UL 796; USB 2.0. RoHS / WEEE complaint	
Manageability	HP Systems Insight Manager HP Rapid Deployment Pack HP BladeSystem PC Blade Switch Integrated Administrator ROM Based Setup Utility (RBSU) Automatic System Recovery (ASR) System Software Manager (SSM) DOS-based replicated setup utility (REPSET) Unit ID LED	
High Availability	Robust boot block recovery ROM HP Session Allocation Manager (SAM) auto roll over to new blade Dual network communication paths	
Security	Administrator's password NX Security Support	
OS Support	Microsoft® Windows® XP Professional with Service Pack 2	

Standard Features

HP e-Class Blade PC Enclosure (sold separately)

Rack Capability

Mounts in HP 10000 and 9000 series, HP System-E, as well as third-party, and Telco racks. Rack mounting hardware for HP and third-party racks ships standard with each blade enclosure. Telco rack-mounting hardware is a separately available option kit.

Rack Airflow Requirements

The HP 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with blade PCs using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U rack includes closing front and rear doors, you must allow 5,350 square cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: Please consult the Setup & Installation Guide for the blade PC for additional details.

Enclosure Includes

- 3U high rack-mountable chassis with 20 blade PC bays
- Rack mounting hardware for HP, Compaq-branded and third-party racks
- Rear bay for BladeSystem PC Blade Switch for network cable management
- Two (2) Diagnostic Adapters (see features following) for connecting keyboard, video, mouse and other devices locally to individual blade PCs
- ProLiant Essentials Foundation Pack licenses for 20 Blade PCs (see features following), includes the HP Systems Insight Manager and ProLiant Essentials Rapid
- Deployment Pack CD
- Four hot-plug fans
- Dual hot-plug power supplies (600 watts each), power cords
- Blade PC blanks (to fill 19 of the 20 blade PC bays)
- Null-modem cable for serial connection to the Integrated Administrator serial
- "Console" connector

Diagnostic Adapter Interfaces

NOTE: Two Diagnostic Adapters are included with every enclosure.

Blade PC LEDs (6)

PS/2 Mouse

PS/2 Keyboard

VGA monitor (functional only when graphics diagnostics card installed)

Serial RS-232 port

USB 1.1 ports (2)

Standard Features

ProLiant Essentials Foundation Pack Software	HP Systems Insight Manager	Systems Insight Manager helps maximize system uptime and performance and reduces the cost of maintaining the IT infrastructure by providing proactive notification of problems before those problems result in costly downtime and reduced productivity. Insight Manager is easy to set up and provides rapid access to inventory information. http://www.hp.com/go/hpsim/ .
	ProLiant Essentials Rapid Deployment Pack	An automated solution for deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands. NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials .
	Interconnect Switch Management System and Utilities	Full featured industry standard command line interface, SNMP and RMON, and TFTP support.

HP BladeSystem PC Blade Switch Features (sold separately)

Wire-Speed Performance	Delivers impressive switching capacities of up to 12.8 Gbps and can be deployed in a wide number of different network deployment scenarios, including Fast Ethernet, edge client connectivity, and wiring closet deployments. Because these switches adhere stringently to industry standards, they can be deployed with other industry-standard compliant networking devices.
Easy, Powerful Management	Supports a number of industry-standard management interfaces such as web-based management, Command Line Interface (CLI), and Simple Network Management Protocol (SNMP v1/v2c/v3). For large network environments, HP's SIM™ provides management control to more easily configure large numbers of deployed switches. HP Systems Insight Manager merges the best features of Insight Manager, Tootools, and Servicecontrol Manager to deliver unified management of HP hardware products
Robust Security	Advanced security features help protect the network from accidental or malicious interference. MAC-based port security and MAC-based Access Control Lists (ACLs) are designed to prevent unauthorized MAC addresses from accessing the network. SNMPv3, SSL and SSH encryption offer the added security of encrypting switch management traffic. RADIUS and TACACS+ support enables centralized, remote authentication of administrative access to the switch. Management access filtering provides a mechanism to limit network hosts that have access to the switches using a wide array of options, such as MAC address, IP address, and VLAN.

HP Integrated Administrator Features

- One RS-232 consol port and one RJ-45 10/100BaseT Fast Ethernet port for access to enclosure and blade PCs
- Provides local and remote access to the CLI
- Remotely power on/off/reboot blade PCs and enclosures
- Remotely toggle on/off unit identification (UID) LEDs of blade PCs and enclosure
- Monitors and controls the enclosure fans, temperature sensors, power supplies, interconnect switch and blade PC status
- Connect to each blade PC's serial text console for enabling full control over blade PC's Power-On Self Test (POST) and boot process, including the ROM-Based Setup Utility (RBSU).
- User administration for up to 25 users. Blade PC bay privileges can be set on a per-user basis
- Virtual NMI button generates non-maskable interrupt for crash debug and analysis
- More than 100 scriptable commands enable automated management
- Selective enabling of all services, such as Telnet, Alertmail, IPSecurity, NTP, SNMP, SSH, User, and WEB
- Logging of operating system console, blade PC and enclosure hardware events, user actions and invalid login attempts
- Administrator notification that a blade is warm
- Enclosure controller blade shutdown (graceful Windows shutdown) if blade overheats
- Emergency blade shutdown in the event of a critical temperature fault

Standard Features

Service and Support

HP Services provides a wide range of service offerings, including a three-year, limited parts warranty on the HP BladeSystem bc1500 Blade PC.

CAUTION: Do not ship Blade PCs and enclosure while inside the rack without first installing the e-Class Enclosure Shipping Bracket (part number PH555A). Failure to use the shipping bracket during transit violates the HP warranty and may result in damage to the Blade PC and/or enclosure.

The HP e-Class Blade PC Enclosure has a three-year, limited warranty on parts, labor and on-site support.

A full range of HP Care Pack packaged hardware and software services:

- Add labor or on-site service for the Blade PC
- Installation and start up
- Extended coverage hours and enhanced response times
- System management and performance services
- Availability and recovery services

NOTE: For more information, customer/resellers can contact <http://www.hp.com/services/carepack>.

NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center at 1-800-567-1616 for details.

Models

bc1500 Blade PC EF298AA (1 pack)

Processor	AMD Athlon 64 1500+
Cache Memory	512K L2
Memory	512-MB DDR SDRAM PC2700 (333-MHz)
Network Controller	Two Broadcom 5705F 10/100 Integrated NICs
Hard Drive	40-GB Ultra ATA/100 5400 rpm
Form Factor	Plugs vertically into HP e-Class Blade PC Enclosure

bc1500 Blade PC EF299AA (10 pack)

Processor	AMD Athlon 64 1500+
Cache Memory	512KB L2
Memory	512-MB DDR SDRAM PC2700 (333-MHz)
Network Controller	Two Broadcom 5705F 10/100 Integrated NICs
Hard Drive	40-GB Ultra ATA/100 5400 rpm
Form Factor	Plugs vertically into HP e-Class Blade PC Enclosure

bc1500 Blade PC RJ888AA (1 pack)

Processor	AMD Athlon 64 1500+
Cache Memory	512K L2
Memory	1-GB (1 DIMM) DDR SDRAM PC2700 (333-MHz)
Network Controller	Two Broadcom 5705F 10/100 Integrated NICs
Hard Drive	40-GB Ultra ATA/100 5400 rpm
Form Factor	Plugs vertically into HP e-Class Blade PC Enclosure

bc1500 Blade PC RJ889AA (10 pack)

Processor	AMD Athlon 64 1500+
Cache Memory	512KB L2
Memory	1-GB (1 DIMM) DDR SDRAM PC2700 (333-MHz)
Network Controller	Two Broadcom 5705F 10/100 Integrated NICs
Hard Drive	40-GB Ultra ATA/100 5400 rpm
Form Factor	Plugs vertically into HP e-Class Blade PC Enclosure

Options

Enclosure and Switch	HP e-Class Blade PC Enclosure (includes 20 licenses for ProLiant Essentials Rapid Deployment Pack at 50% of the standard per-node license list price)	DW366A
	HP BladeSystem PC Blade Switch (includes Integrated Administrator module) NOTE: Switch tray integrates into Blade PC Enclosure providing 40:1 reduction in network cables for each enclosure.	PX 830AW
Blade PC Memory	256-MB DDR SDRAM (333-MHz) Option Kit (1 x 256 MB)	EK691AA
	512-MB DDR SDRAM (333-MHz) Option Kit (1 x 512 MB)	EK692AA
	1-GB DDR SDRAM (333-MHz) Option Kit (1 x 1 GB)	EK693AA
	NOTE: The bc1500 standard configuration contains either 512-MB memory (1x512-MB SODIMM) or 1GB (1x1GB) in Slot 1; slot 2 empty.	
Blade PC Diagnostic Kits	Blade PC Diagnostic Graphics Cards Bulk Pack (5 pack – cards only)	DV300C
	Blade PC Diagnostic Kit (2 diagnostic adapters with USB 2.0 support+ 5 graphics cards)	AG136AA
Fiber GBIC	Avago Gigabit SX Mini-GBIC (2 per pack – for use with the HP BladeSystem PC Blade Switch)	AH064AA
Enclosure Shipping Brackets	Enclosure Shipping Bracket Kit (2 per kit for 1 enclosure) NOTE: When shipping an enclosure in a rack, shipping brackets must be installed to prevent damage during transit.	PH555A
Microsoft Remote Desktop Licenses	Microsoft Remote Desktop License (RDL)	PX419A#B1K
Software	HP Session Allocation Manager License – 4yr	AH25AA
	HP Session Allocation Manager License – 2yr	AH24AA

Memory

HP BladeSystem bc1500 Blade PC
Standard Memory

A choice of SKUs with:

- 512-MB 333-MHz DDR SDRAM (1x512 MB SODIMM) installed.
- 1-GB 333-MHz DDR SDRAM (1x1 GB SODIMM) installed

Standard Memory Plus Optional Memory

Up to 2 GB of DDR SDRAM is available with the installation of optional DDR SDRAM memory expansion kits (sold separately).

Memory		Slot	
		1	2
Standard	512 MB or 1 GB	512 MB or 1 GB	Empty
Maximum	2 GB	1 GB	1 GB

Technical Specifications

HP BladeSystem bc1500 Blade PC	Dimensions	Height	4.7 in (11.94 cm)
		Width	0.8 in (2.03 cm)
		Depth	15.5 in (39.37 cm)
	Weight	Maximum	2.2 lb (1.0 kg)
	Temperature ¹	Operating	50° to 95° F (10° to 35° C)
		Non-operating shipping	–40° to 140° F (–40° to 60° C)
		Non-operating storage	–4° to 140° F (–20° to 60° C)
	Relative humidity ¹ (non-condensing)	Operating	10% to 90%
		Non-operating shipping	10% to 90%
		Non-operating storage	10% to 95%
	LEDs (Top to bottom)	Unit identification	Off = off
			Steady blue = blade identified
			Blinking blue = being accessed remotely
		Health	Off = off
			Green = health good
			Amber = degraded or power up prohibited by the Integrated Administrator
		NIC A	Blinking or steady red = critical
			Off = off
			Green = linked to network
			Blinking green = Activity on network
	NIC B		Off = off
			Green = linked to network
			Blinking green = activity on network
	Drive activity		Off = No drive activity
			Blinking green = drive activity
	Power		Off = no AC power to blade or enclosure
			Amber = Enclosure on and in good health
			Green = blade power on

NOTE 1: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 112° F (45° C). Minimum pressure for storage is 70 KPa.

40-GB Ultra ATA/100 Hard Drive	Capacity	40 GB	
	Interface	Ultra ATA 100	
	Transfer rate synchronous (maximum)	100 MB/s	
	Seek time (typical reads, including settling)	Single track	2.0 ms
		Average	12 ms
		Maximum	22 ms
	Rotational speed	5400 rpm	

Technical Specifications

Broadcom 5705F 10/100 Integrated NIC	Network interface	10Base-T/100Base-TX	
	Compatibility	IEEE 802.3/802.3u compliant	
	Data transfer method	32-bit bus-master PCI	
	Features	NIC A WOL enabled and PXE compliant	
	Network transfer rate	10Base-T (half-duplex)	10 Mb/s
		10Base-T (full-duplex)	20 Mb/s
		100Base-TX (half-duplex)	100 Mb/s
		100Base-TX (full-duplex)	200 Mb/s
Connector	Mates into enclosure center wall assembly		
<hr/>			
Enclosure	Dimensions	Height (3U)	5.25 in (13.34 cm)
		Width	19 in (48.26 cm)
		Depth	27 in (68.58 cm)
	Weight (with interconnect tray)	No blade PCs	59 lb (26.76 kg)
		20 blade PCs	103 lb (46.7 kg)
	Rated input (autosensing)	Voltage	Minimum: 90 VAC
			Maximum: 264 VAC
			Nominal: 100 to 120 VAC or 200 to 240 VAC
		Frequency	47 to 63 Hz
		Current	11.7 A at 90 VAC
			8.5 A at 120 VAC
			4.3 A at 240 VAC
		Power	1000 W
	BTUs	Per hour	3416
	Temperature ¹	Operating	50° to 95° F (10° to 35° C)
		Shipping, 72 hours	-40° to 140° F (-40° to 60° C)
	Relative humidity (non-condensing)	Operating	10% to 90%
		Non-operating	10% to 95%
	Management	Enclosure self recovery	
		Health logs	
		Redundant power supply utility	
		Automatic System Recovery (ASR)	
	High availability	Redundant hot-plug power supplies	
		Redundant hot-plug fans	

NOTE 1: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 112° F (45° C). Minimum pressure for storage is 70 KPa.

For more information on CCI power and thermal facility site planning:

<http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls>

Technical Specifications

Enclosure	Hot-Plug Power Supply	Dimensions	Height	3.579 in (9.14 cm)
			Depth	10.24 in (28.45 cm)
			Width	4.47 in (11.43 cm)
	Weight		6.5 lb (2.95 kg)	
	Rated input	Voltage (autosensing)	100 to 127 VAC (200 to 240 VAC)	
		Frequency	47 to 63 Hz	
		Current	8.5 A at 120 VAC (4.3 A at 240 VAC)	
		Power	1000 W	
		Maximum peak power	1167 W	
	Rated output	Voltage/current	5.01 V - 0.5 A ~ 34 A	
			3.33 V - 0.5 A ~ 36 A	
			12.1 V - 0.5 A ~ 38 A	
			5 Vaux - 0.2 A ~ 8 A	
		Power RMS	600 W	
		Maximum peak power	700 W for 2 minutes	
	Temperature ¹	Operating	50° to 55° F (10° to 35° C)	
		Non-operating, shipping	-40° to 85° F (-40° to 60° C)	
	Relative humidity ¹ (non-condensing)	Operating	10% to 90%	
		Non-operating	10% to 95%	
	Dielectric voltage withstand	Input to output	2000 VAC minimum	
		Input to ground	1500 VAC minimum	

NOTE 1: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 112° F (45° C). Minimum pressure for storage is 70 KPa.

HP BladeSystem PC Blade Port configuration Switch	<ul style="list-style-type: none">• 42 10/100BASE-T ports• 4 RJ-45 10/100/1000BASE-T ports• 4 SFP slots for fiber media support (disables Copper)• 802.3u and 802.3ab Auto-negotiation for speed, duplex mode and 802.3x flow control; Auto MDI/MDIX on uplink ports• Port mirroring; Broadcast storm control; Cable Tester
Performance	<ul style="list-style-type: none">• Switching capacity 12.8 Gbps• Forwarding rate 9.5 Mpps• Up to 8,000 MAC addresses
Management	<ul style="list-style-type: none">• Web-based management interface• Industry-standard CLI accessible via Telnet or Local Serial Port• SNMPv1, SNMPv2c and SNMPv3 supported; four RMON groups supported (history, statistics, alarms and events)• TFTP transfers of firmware and configuration files• Dual firmware images on-board• Multiple configuration file upload/download supported• Statistics for error monitoring and performance optimization including port summary tables• DHCP IP address management supported• Secure Telnet (SSH)

Technical Specifications

Quality of service	<ul style="list-style-type: none">• Layer 2 trusted mode (IEEE 802.1p tagging); Layer 3 trusted mode (DSCP); 4 priority queues per port; Adjustable Weighted-Round-Robin (WRR) and strict queue scheduling
Security	<ul style="list-style-type: none">• IEEE 802.1x based edge authentication• Switch access password protection• User-definable settings for enabling or disabling Web, SSH, Telnet, SSL management access• Port-based MAC address alert and lock-down• IP address filtering for management access via Telnet, HTTP, HTTPS/SSL, SSH and SNMP• RADIUS and TACACS+ remote authentication for switch management access• SSLv3 and SSHv2 encryption for switch management traffic; Management access filtering via management access profiles
VLAN	<ul style="list-style-type: none">• VLAN support for tagging and port-based as per IEEE 802.1Q; Up to 256 VLANs supported• Dynamic VLAN with GVRP support; Private VLANs
Switching features	<ul style="list-style-type: none">• Link aggregation with up to four aggregated links and up to four member ports per aggregated link (IEEE 802.3ad); LACP support (IEEE 802.3ad)
Availability	<ul style="list-style-type: none">• Spanning Tree (IEEE 802.1D) and Rapid Spanning Tree (IEEE 802.1w) with Fast Link Support• Multiple Spanning Trees (IEEE 802.1s)• Static IP multicast; IGMP snooping for IP multicast support
Layer 2 multicast	<ul style="list-style-type: none">• Static IP multicast; IGMP snooping for IP multicast support

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